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Section C

Budgeting concept s





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Section C: Planning and Budgeting (20%)

Study Unit 29: C.1. Budgeting Concepts

Most people in business are familiar with budgets in at least an informal manner. People often see them at work or are impacted by them when something cannot be done because it is "not in the budget." The budget is developed in advance of the period it covers, and it is based on forecasts and assumptions. But the budget is not developed primarily to restrict what can be done. It is intended as a planning tool and is a guideline to follow to achieve the company's planned goals and objectives.

The budgeting process is inseparably linked to the planning process in an organization. Major planning decisions by management are required before the budget can be developed for the coming period. Furthermore, the development of the budget may cause previously developed short-term plans by management to require adjustment. As the projected quantitative results of the plans become clear in the developing budget, management may need to revise its plans. After the plans and the budget have been adopted, the budget provides control and feedback as the period unfolds.

Budgeting Concepts covers the different types of planning and budgets and how the planning and budgeting process within a company works. Variance reporting, which is reporting on differences between the actual and the budget, is introduced here and will be discussed further in this book in Section D, *Cost Management and Performance Metrics.*

The Relationship Among Planning, Budgeting, and Performance Evaluation

Planning, budgeting, and performance evaluation are interrelated and inseparable. Following is an overview of the process:

1) Management develops the **plan**, which consists of goals, objectives, and a proposed plan of action for the future. The plan includes the company's short-term as well as long-term goals and objectives and its business opportunities and risks. For example, a plan may look at the future from the perspective of expanding sales, increasing profit margin, or whatever the company sees as long-term goals. The plan is a guide showing where the company needs to be in the future.

2) The plan developed by management leads to the formulation of the **annual profit plan**, also called the **budget**. The terms "profit plan" and "budget" will be used interchangeably throughout this section. The profit plan expresses management's plans for the future in **quantitative terms**. The profit plan also identifies the resources that will be required to fulfill management's goals and objectives and how the resources will be allocated. The budget should include the overall company's performance as well as the performance of its individual departments or divisions. Managers at all levels need to reach an understanding of what is expected.

3) Budgets can lead to changes in plans and strategies. Budgets provide **feedback to the planning process** because they quantify the likely effects of plans that are under consideration. This feedback may then be used by managers to **revise their plans** and possibly their strategies as well, which will then cause revisions to the profit plan during the budgeting process. This back-and-forth exchange may go on for several iterations before the plans and the budget are adopted.

4) Once the plans and the budget have been coordinated and the profit plan has been adopted for the coming period, as the organization carries out its plans to achieve the goals it has set, the **master budget** is the document the organization relies on as its operating plan. By budgeting how much money the company expects to make and spend, the company creates a series of ground rules for people in the organization to follow throughout the year.

5) The profit plan is a **control tool**, in the context that "controlling" is defined as the process of measuring and evaluating actual performance of each organizational unit of an enterprise and taking corrective action when necessary to ensure accomplishment of the firm's goals and objectives. The profit plan functions as a control tool because it expresses what measures will be used

to evaluate progress. **A regular (monthly or quarterly) comparison of the actual results—both revenues and expenditures—with the profit plan will give the company's management information on whether the company's goals are being met.** This comparison should include narrative explanations for variances and discuss the reasons for the differences so that mid-course corrections can be made if necessary.

6) Sometimes, the comparison of actual results to the profit plan will result in the revision of prior plans and goals or the formulation of new plans, changes in operations, and revisions to the budget. For example, if changes in the company's external environment cause variances in revenues or costs to become extreme, a revised short-term profit plan covering the remainder of the year may be necessary.

7) Changed conditions during the year will be used in planning for the next period. For example, if sales decline, the company may plan changes in its product line for the next period to reverse the trend.

Advantages of Budgets

When properly developed and administered, budgets:

1) Promote **coordination** and **communication** among organization units and activities.
2) Provide a **framework for measuring performance**.
3) Provide **direction** and **motivation** for managers and employees to achieve the company's plans.
4) Promote the **efficient allocation of organizational resources**.
5) Provide a means for **controlling operations**.
6) Provide a means to **check on progress** toward the organization's goals.

1) Coordination and Communication

Coordination means balancing the activities of all the individual units of the company in the best way so that the company will meet its goals and the individual units of the company will meet their goals. **Communication** means imparting knowledge of those goals to all employees.

For example, when the sales manager shares sales projections with the production manager, the production manager can plan and budget to produce the inventory that is to be sold. And the sales manager can make better forecasts of future sales by coordinating and communicating with branch managers, who may be closer to the customers and know what the customers want.

2) Measuring Performance

Budgets make it possible for managers to measure actual performance against planned performance. The current year's budget is a better benchmark than last year's results for measuring current performance. For example, last year's results may have been negatively impacted by poor performance and the causes may have now been corrected, so comparing current results with the previous year's results would set the bar too low. Furthermore, the past is never a good predictor of the future, and the profit plan should reflect the conditions anticipated for the coming period, not the conditions that existed during the past period or periods.

However, performance should not be compared against the current budget only, because that can result in lower-level managers setting budgets that are too easy to achieve. It is also important to measure performance relative to the performance of the industry and even relative to performance in prior years.

3) Providing Direction and Motivating Managers and Employees

A budget provides direction to all levels of management. A challenging budget encourages improved employee performance because no one wants to fail, and falling short of achieving the budgeted numbers is perceived as failure. The goals quantified in the budget should be demanding but achievable. If goals are so high that they are impossible to achieve, however, they are de-motivating.

4) Efficient Allocation of Resources

The process of developing the operating budgets for the individual units in an organization includes identifying the resources each unit will need to carry out the planned activities. For example, the process of developing the various manufacturing budgets requires making projections for direct materials (for the direct materials usage and purchases budgets) and direct labor (for the direct labor usage budget) that will be required to produce the planned output. The process of budgeting for administrative salaries requires forecasts of administrative employees that will be needed by each department. If funds will be available for only a certain number of administrative employees in the organization, some units' projections may need to be adjusted. This process leads to efficient allocation of organizational resources.

Efficient allocation of organizational resources during the budgeting process may also include making decisions about the most profitable way to utilize the resources available. A decision about what product or products to produce may need to be made under a situation of **constraint**. A constraint exists when one or more of the factors of production are limited in some way. Decisions about what product or products to produce would be required if a plant were operating at full capacity and management wanted to maximize net income without increasing capacity.

Decisions made under situations of constraint are usually short-run decisions. In the short run, managers must do the best they can with the resources they have. When a company is operating at capacity, it maximizes its operating income by maximizing the contribution margin per unit of the resource that is limiting either the production or the sale of products.

In the long run, however, capacity can be expanded to reduce or eliminate constraints.

Note: Contribution margin is sales revenue minus variable costs. A company or division's contribution margin is the amount from sales that the company can put toward covering its fixed costs or profit after the variable costs have been covered. Contribution margin per unit is the selling price of one unit minus the variable cost of one unit. The concepts of contribution margin and contribution margin per unit are covered more fully in Section D, *Cost Management and Performance Metrics*.

Example: Carl Corporation has only 3,000 machine hours available to produce its products. It is operating at full capacity and can sell all the products it manufactures. Carl Corporation produces two products: racks for electronic equipment and file cabinets. The price and variable costs and the number of machine hours required to produce each product are as follows:

	Per Unit Data	
	Racks	File Cabinets
Selling Price	$450.00	$600.00
Variable Costs	200.00	300.00
Contribution margin	$250.00	$300.00
Machine hours/unit	2	4

Which product should Carl Corporation budget to produce, using its available 3,000 machine hours, assuming fixed costs are the same under either option?

(continued)

Solution:

Since the constraint is the number of available machine hours, and since Carl Corporation can sell as much as it manufactures of either product, Carl should produce the product that provides **the highest contribution per machine hour**.

The rack's contribution margin per machine hour is \$250 ÷ 2, or **\$125**.

The file cabinet's contribution margin per machine hour is \$300 ÷ 4, or **\$75**.

Even though the contribution margin for one file cabinet is higher than the contribution margin for one rack, since the racks have the higher contribution **per machine hour** required to produce them, Carl should produce only racks. Racks return a higher contribution per unit of the scarce resource.

Proof:

Using 3,000 machine hours, Carl Corporation would be able to produce 1,500 racks, since each rack requires 2 machine hours. Thus, the total contribution margin for racks during a month's time would be 1500 × \$250, or \$375,000.

Using the same 3,000 machine hours, Carl Corporation would be able to produce 750 file cabinets, since each file cabinet requires 4 machine hours. The total contribution margin for file cabinets during a month's time would be 750 × \$300, or only \$225,000.

Therefore, in the short run, under the existing constraint of 3,000 machine hours available per month, producing only racks will maximize operating income.

5) and 6) Controlling Operations and Checking on Progress Toward Goals

Control refers generally to the set of procedures, tools and systems that a company uses to ensure that progress is being made toward accomplishing its goals and objectives. Financial control is achieved by comparing actual results to budgeted financial amounts. Thus, budgets provide the standard against which actual financial results are compared. Differences between the actual and the budget are called variances, and **variance analysis** is performed to determine whether the variances are favorable or unfavorable.

Characteristics of Successful Budgeting Processes

Characteristics of successful budgeting processes include the following:

- The success of a budget program depends on the **attitude of top management toward it**—whether top management supports it and believes the program is a vital part of the company's activities—and on how top management uses the budget information.
- The **process must have the support of management** at all levels. The support of top management is critical to gain the support and acceptance of lower-level managers, and the support and acceptance of lower-level managers is critical to gaining the support and acceptance of the affected employees.
- The people who have the responsibility for carrying out the budget **need to feel it is their budget**, not a detached, impersonal, institutional budget. Department managers should **participate** in preparing their budgets, because they are more likely to have knowledge of their areas of responsibility, so their budget forecasts should be more reliable than those of top management. Furthermore, when managers are involved in preparing their budgets, they are more likely to be committed to meeting the budget.
- The budget should be a **motivating device**. It should help the people in the organization to work toward the organization's goals for the improvement of the company.
- The budget is more likely to be successful if all concerned, from managers to their employees, see it as a **planning and coordinating tool to help them do a better job** and not as a rigid taskmaster or a tool for top management to assign blame.

- **The budget should be able to be revised if necessary**. A budget should be flexible. If conditions change during the budget period, the budget should not be used as an excuse for not doing something that is strategically important to the company, such as acting on an unforeseen business opportunity that arises. The statement "it's not in the budget" should not be used.
- The budget should be **technically correct** and the numbers in it should be **reasonably accurate**. An incorrect budget or one with inaccurate numbers will not gain the affected people's confidence, is likely to be ignored, and will be useless.
- **Cost management efforts should be linked to budgeting**. Accurate cost information during the budgeting process is basic to budgeting. A company that uses accurate cost management techniques and provides managers who are developing their budgets with access to cost information improves both the accuracy and the speed of its budget process.
- **The development of the budget should be linked to corporate strategy**. It should begin with the company's short- and long-term plans. Linking them gives the managers and employees a clearer understanding of strategic goals, which leads to greater support for goals, better coordination of tactics, and ultimately stronger company performance.
- Management should use the budget as a means of **establishing goals**, **measuring results**, and **determining areas that need attention**. The targets established should be achievable but challenging.
- The firm's management should assess the future as it pertains to the firm's strategic goals and should **use the budgeting process to minimize the adverse effects** that anticipated problems might have on operations.
- **Market feedback and economic environment information should be used** in setting expectations. For example, if a recession is expected during the budget year, a corporate goal of a 10 percent increase in sales may not be reasonable or achievable.
- **Communication is vital**. Management must communicate strategic objectives. Effective communication among all levels of the organization leads to challenging but achievable budgets.
- **The budget should promote coordination between functional areas of the organization**, and operating activities of diverse business units should be synchronized. For example, the sales manager will want to make as many sales as possible, whereas the credit manager will want to limit bad debt write-offs. A coordinated effort to establish credit standards that both managers can support should be incorporated into the budgeting process.
- **Budgeting should not be rigid**. If revenue decreases are anticipated for the coming year, an "across the board" cost reduction applied to all areas can create additional problems. A coordinated effort should be made to find where making cuts would do the least damage to company operations.
- **Managers should be evaluated on performance measures other than simply meeting budget targets**. Meeting budget targets should be secondary to other performance measurements.
- **Budget complexity and budget cycle time should be reduced**. The budget process should be streamlined as much as possible through controlling the number of budgets that are needed and by standardizing budgeting methods. Automate budgeting as much as possible through the use of information technology and make sure that the budget developers know how to use new technologies.
- **The time period for a budget should reflect the purpose of the budget**. If a new product is under consideration and the purpose is to budget for the total profitability of the product, the capital budgeting period should include the design, manufacturing, sales, and after-sales support for the expected life of the product.
- **Sufficient lead time** is critical because the preparation of a budget usually takes several months.

Time Frames for Budgets

A profit plan is generally prepared for a set period of time, commonly for one year, and the plan is developed on a monthly or possibly a quarterly basis. Usually, the profit plan covers the same time period as is covered by a company's fiscal year. When the budget period is the same as the fiscal year, budget preparation is easier and comparisons between actual results and planned results are facilitated.

A comparison between actual results and planned results is called a **variance report**. Variance reporting is covered in detail in Section D, *Cost Management and Performance Metrics*.

Budgets can also be prepared on a continuous basis. This type of budget is called a **rolling budget** or a **continuous budget**. When a rolling budget is used, the budget covers a set number of months, quarters, or years into the future at all times. Each month or quarter, the month or quarter just completed is dropped from the budget and a new monthly or quarterly budget is added to the end of the budget.

For example, in September 20X3, the rolling budget will cover the months of October 20X3 through September 20X4. In October 20X3, the rolling budget will cover the months of November 20X3 through October 20X4.

At the same time as a month or quarter is dropped and a new month or quarter is added, the other periods in the budget can be revised to reflect any new information that has become available. Thus, the budget is continuously being updated and always covers the same amount of time in the future.

When continuous budgeting is used, budgeting and planning are always being done. Advantages are:

- Budgets are no longer done just once a year.
- A budget for the next full period (usually 12 months) is always in place.
- The budget is more likely to be up to date, particularly in an environment that is changing rapidly. A rolling budget helps management to be more responsive to unexpected changes in circumstances, because it allows management to adjust the budget for those changes. As a new quarter or month is added at the end, management has an opportunity to review the other periods in the budget, as well, for potential revisions incorporating the new information.
- Managers are more likely to pay attention to budgeted operations for the full budget period.

Firms usually have longer-term budgets, as well. Budgets for the years beyond the coming year usually contain only essential operating data and do not attempt to present a full operating and financial budget. Having a long-term budget along with the coming year's master budget enables management to quantify the effect of its strategic plans on future short-term operations.

Methods of Developing the Budget

Budget development can be done using a participative process, an authoritative process, or a consultative process.

- A **participative** budget is developed from the bottom up. All the people affected by the budget are involved in the budget development process, even lower-level employees. This type of budget development involves negotiation between lower-level managers and senior managers.
- An **authoritative** budget is developed from the top down. Senior management prepares all the budgets for every segment of the organization. The budgets are imposed upon the lower-level managers and employees.
- A **consultative** budget is a combination of authoritative and participative budget development methods. Senior management asks for input from lower-level managers but then develops the budget with no joint decision-making or negotiation involved.

These methods all have their benefits and limitations. Since consultative budget development is a compromise between participative and authoritative budgeting, it has many of the benefits and limitations of both.

Who Should Participate in the Budgeting Process?

An effective budgeting process usually combines various approaches: bottom-up, top-down, and negotiation. Either senior management or a budget committee made up of senior managers provides budget guidelines based on their strategic plans, assumptions about the economy, and other relevant factors. Department and division heads prepare initial budgets based on those guidelines and send them to senior management for compilation into an initial consolidated budget and for review. Senior managers review the initial consolidated budget and initial individual budgets and send the individual budgets back to the department heads for revision. After several rounds of negotiations, the budget is finalized.

The importance of senior management's involvement cannot be over-emphasized. The support of top management is crucial to achieving successful development and administration of the budget. Furthermore, top management support is necessary to gain lower-level management participation. If lower-level managers feel that top management does not support the effort, the lower-level managers are not likely to support it either.

Different organizations will structure their budget development processes differently, depending on each organization's needs and culture. The budget development process that follows is a general one and is not prescriptive.

Budgetary Slack and Its Impact on Goal Congruence

Goal congruence is defined as "aligning the goals of two or more groups." As used in planning and budgeting, it refers to the aligning of goals of the individual managers with the goals of the whole organization. Sometimes the performance of an individual manager's unit will benefit from an action the manager takes, but the overall performance of the company is either not impacted at all or it may actually be negatively impacted. An individual division manager may reject a capital investment that would improve the company's total profits because the proposed project's return on investment would cause his own division's return on investment to decrease. Situations like these occur because the goals of the individual managers are not aligned with the goals of the company.

The company's strategic objectives are communicated to individual managers as part of the planning and budgeting process. However, a hazard in budgeting is that it may lead to behaviors on the part of managers that benefit them or their departments but are not congruent with the goals of the company. These behaviors are more likely to occur if managers' performance will be evaluated according to whether they meet their budget targets. When managers are evaluated according to whether they meet their budgets, managers who develop the budgets that they will be accountable to meet may build in **budgetary slack** to make sure their budgets are achievable without any risk of failure. Budgetary slack is the difference between the amount budgeted and the amount the manager actually expects. Building in budgetary slack is the practice of **underestimating planned revenues** and **overestimating planned costs** to make the overall budgeted profit more achievable.

On the positive side, budgetary slack can provide managers with a cushion against unforeseen circumstances, which can limit managers' exposure to uncertainty and thereby reduce their risk aversion. The reduced anxiety about risk may help the managers make decisions that are more closely congruent with the goals of senior management.

However, budgetary slack often creates more problems than it solves.

For example, budgetary slack can misrepresent the true profit potential of the company and can lead to inefficient resource allocation and poor coordination of activities within the company. As a result, planning inaccuracy spreads throughout the company. Furthermore, if sales are planned too low, production will also be planned too low, possibly leading to product shortages because budgeted demand has been understated. The advertising program and distribution expense budgets may be planned incorrectly, and the cash budget might be inaccurate.

Ways to reduce the incidence and effect of budgetary slack include:

- Use budgets as planning and control tools but not for manager performance evaluation.
- Reward managers based on the accuracy of the forecasts they used in developing their budgets. For example, the company's senior management could say that the more accurate a division manager's budgeted profit forecast is and the greater the amount by which it is exceeded, the higher the manager's bonus will be.
- Use measures other than comparison of actual results to the budget to evaluate managers. For example, managers could be evaluated on comparison of actual results to external benchmark performance measures.
- Top management should educate lower-level managers on the importance of accurate budgeting.

Responsibility Centers and Controllable Costs

A **responsibility center** is a subset of a business with its own staff, policies, procedures, financial reporting, and its own goals and objectives.

Control in an organization is exercised through responsibility centers. A manager of a responsibility center is responsible for revenues generated, expenses incurred, and funds invested by the center, as applicable. Senior management can review all financial activities and results by responsibility center and hold specific employees accountable.

Budgeting must also be done at the responsibility center level so that each responsibility center's financial results can be compared to the budgeted amounts. However, responsibility center managers should be responsible for budgeting and for variances from the budget only for the items that they can control.

Some costs are controllable by a given manager and some costs are not. **Controllable costs** are costs for which the manager has the authority to make the decisions about how money will be spent. **Non-controllable costs** are costs that are ordinarily controlled at a higher level in the organization, such as the manager's salary or bonus. The manager's salary or bonus **is** controllable, but not by the manager. The manager's salary will usually be assigned to his or her responsibility center's budget and will appear on reports comparing actual results to the budgeted amount, but the manager should not be held responsible for it.

The allocation of the overall organization's indirect costs may be another non-controllable cost, since indirect costs may be allocated on any of a number of bases, some of which may be controllable by the manager of the responsibility center and some of which may not.

Each budgeted cost assigned to a responsibility center should be identified as either controllable or non-controllable by that responsibility center's management. For example, salaries in the accounting system may be segregated in two accounts: controllable salaries and non-controllable salaries. Each would then be budgeted by the person who has control over it, and that person would be responsible for explaining the variances.

All costs should be included on **some** manager's variance report and identified as the responsibility of the manager on whose report they appear. If an expense is classified as non-controllable on a given manager's budget reports, then that expense should be included as a controllable expense on the report of the higher-level manager who makes the decisions that affect that expense.

Note: All costs should be controlled by someone. Whenever no one is responsible for a cost, the uncontrolled cost creates great risk for the company.

It is also important to recognize that fixed costs and indirect costs are not always uncontrollable, and variable costs and direct costs are not always controllable. The nature of each cost will vary according to its characteristics and each cost should be analyzed to determine who controls it.

The distinction between controllable and non-controllable costs is especially important if managers' performance evaluations will be dependent on their meeting budgetary targets. (Although evaluating managers only on their ability to meet budgetary targets is not a good idea, it may be done in some organizations.) If other performance measures are used to evaluate managers, the distinction between controllable and non-controllable costs may be less important.

Regardless of whether or not managers' evaluations are affected by their meeting budgetary targets, the person who is responsible for making the decisions that affect a cost should still be the person who reports on variances between the actual and planned costs, because that person is responsible for budgeting for the cost and for making spending decisions. That person should also make any operational adjustments that those variances may identify as needed.

Study Unit 30: C.2. Budgeting Methodologies

The Annual/Master Budget

The master budget is the culmination and the goal of the budgeting process. It expresses management's operating and financial plans for a full year, usually the entity's fiscal year.

The master budget is also called the **comprehensive budget**. The master budget is a full set of budgeted financial statements for the budget year, including monthly or at least quarterly interim budgeted financial statements. The budgeted financial statements include the **budgeted balance sheet**, **budgeted income statement**, and **budgeted statement of cash flows**. The budgeted financial statements are prepared by responsibility center, and the responsibility center budgeted statements are consolidated into the company-wide budgeted financial statements. The individual responsibility center budgets and the consolidated budget together make up the master budget.

A projected financial statement can be called a **pro forma financial statement**; however, the master budget is not a pro forma financial statement. The term **pro forma** is used to refer to a forecasted financial statement prepared for a specific purpose (for example, to do "what if" analysis in the process of planning). A company might prepare many different sets of pro forma financial statements for the same period in its planning process. A pro forma financial statement is not used for formal variance reporting as the master budget and the flexible budget[74] are. However, if an action that was forecasted is implemented, the company would probably want to compare the actual results with the forecasted, pro forma ones. But pro forma financial statements are not a part of the formal budgeting process. They are used for planning and decision-making purposes, and the amounts in them may be quite different from the amounts in the master budget.

The master budget is a **static budget**. A static budget is one that is prepared for just one planned activity level, and the activity level is whatever is projected before the period begins.

> **Note**: The term **activity level** or **level of activity** is used in planning and budgeting to refer to various activities. It is often used to mean the planned number of units the company expects to produce or the planned number of direct labor or machine hours the company expects to use. It can also refer to a planned sales volume or any other planned volume.

The master budget is created using both non-financial and financial assumptions, which are established as part of the planning process. For instance, companies develop budgets for the number of units of each product that they expect to manufacture and sell, the number of employees they will need, and so forth. The master budget is a result of both **operating decisions** and **financing decisions**. Operating decisions are concerned with the best use of the company's limited resources. Financing decisions are concerned with obtaining the funds to acquire the resources the company needs.

A budget that is broken down according to responsibility center lines will provide more feedback and will function as more of a control tool than one that is not prepared by responsibility center, because each responsibility center manager will be responsible for meeting his or her responsibility center's budget. Ideally, each responsibility center manager will also be responsible for developing his or her responsibility center's budget. These underlying budgets are used in developing the master budget. The master budget is the **consolidation** of all the responsibility center budgets. It comprises **operating budgets** and **financial budgets**.

Operating budgets are used to identify the resources that will be needed to carry out the planned activities during the budget period, such as sales, services, production, purchasing, marketing, and R&D (research and development). The operating budgets for individual units are compiled into the budgeted income statement.

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[74] A **flexible budget** is a budget that is prepared using **budgeted** variable revenues and costs per unit multiplied by the **actual** level of activity. It is essentially what the budget would have been if the company had known what the actual level of activity would be when it developed the budget.

Financial budgets identify the sources and uses of funds for the budgeted operations. Financial budgets include the cash budget, budgeted statement of cash flows, budgeted balance sheet, and the capital expenditures budget.

Static Budgets and Flexible Budgets

When a company develops its budget for a future period, it does not know what its actual sales and production volumes will be during that period. Revenues and costs in the master budget are based on **forecasted** volumes.

A disadvantage of the master budget is that it is a **static budget** because each item in it is developed for one specific activity level.[75] When variance reports are prepared that compare the actual results to the master budget, one of the causes for each variance will usually be that the actual volume achieved was different from the planned volume. Variances between actual results and master budget amounts are not very useful for the company because they do not let the company know how the actual results compared to what the results **should have been**, based on the actual level of sales.

Since variances due simply to volume variations are expected, it is more important to focus on variances caused by other factors. For example, a variance caused by an increase in the cost per unit of direct labor, leading to a total cost above what is expected for the **actual** production level could signal a problem in production and should be investigated. But an increase in the cost of direct labor that is caused by increased production only—**not** by an increase in cost per unit leading to a total cost above the expected amount for the actual production level—is not a production problem.

A **flexible budget** takes the variable revenues and costs as they are planned in the master budget (the static budget) and adjusts the master budget amounts to what the budgeted amounts would have been if the actual sales volume had been used in preparing the budget.

A flexible budget is prepared **after the actual level of activity is known**. A flexible budget for a production department will consist of the budgeted variable amounts per unit adjusted to the actual volume of units produced. A flexible budget for an income statement will be adjusted to the actual volume of units sold.

The flexible budget is prepared for the actual level of activity using all of the standard variable costs per unit along with the standard total fixed cost as determined at the beginning of the year. Essentially, what the flexible budget does is answer the question, "If we had known what the actual level of activity was going to be when we prepared the budget, what would the budget have looked like?" In other words, the flexible budget is the budget that would have been prepared for the actual level of activity for the period.

A flexible budget is prepared and used **in addition to** the master budget. The flexible budget is different from the master budget because the flexible budget focuses on variances that are caused by things **other than** differences in volume from the volume that was assumed when the master budget was prepared. The flexible budget takes out the portion of the total variance from the master budget that was caused by variances in volume. The flexible budget variances thus report only the variances that were caused by other factors, so the flexible budget allows management to focus on the variances that may be caused by production or administrative problems that need attention.

Since the flexible budget is based on the actual level of activity for a period, the flexible budget amounts cannot be finalized for a reporting period (usually a month at a time) until the period is past and the actual achieved activity level for that period is known.

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[75] The term "activity level" is used to refer to the volume of whatever activity is relevant to the situation. The relevant activity levels are usually sales volume and production volume. Thus, "activity level" could refer to either sales volume or production volume.

Note: Here is another way of looking at the preparation of the flexible budget: After the budget process is complete and the master budget has been created (but before the actual sales results are known), the budgeting team creates several other budgets for different levels of sales. If, for example, the master budget projected 100,000 units of sales, the flexible budget process will create budgets for 85,000 units, 90,000 units, 95,000 units, 105,000 units, 110,000 units, and 115,000 units. At the end of the year, the actual results are compared to the flexible budget that matches the actual level of sales.

Theoretically, such alternate budgets can easily be created for a company that produces one product. Simply divide the master budget total variable costs by the master budget total volume to be sold and multiply the result by the revised budgeted total volume to be sold. Budgeted fixed costs are the same in the flexible budget as they are in the master budget, as long as the changes in volume do not move outside the relevant range[76] and thus cause the total fixed costs to change.

In reality, of course, it is impossible to prepare thousands and thousands of flexible budgets, one for every possible activity level and–for a multiple product company–every possible combination of sales. For that reason, the flexible budget is not prepared until the actual level of activity is known.

If a variance is caused by a decline in sales volume below the planned level, of course, the decline in sales does need to be addressed, and a comparison of actual results to the flexible budget will not be useful for recognizing a decline in sales. For that reason, a comparison between actual results and the master budget for sales, variable costs and contribution margin[77] also needs to be done. Thus, a flexible budget cannot replace a static budget. Most companies that use flexible budgeting also have their managers report on the variances between the master (static) budget and the flexible budget because those variances are the variances that are due to volume variations.

In determining what variances should be investigated, the following factors should be considered:

- **The magnitude of the variance**. What constitutes a material variance will depend on the size of the budget line item. If the budgeted amount is $1,250, a $1,000 variance would be 80% of the budgeted amount and would be important to investigate. If the budgeted amount is $1,000,000, a $1,000 variance would be only 0.10% of the budgeted amount and would not be material.
- **The trend of the variance over time**. If an unfavorable variance has been ongoing for several months and is getting larger, then it needs to be investigated, even if its magnitude is not large.
- **The likelihood that an investigation will eliminate future occurrences of the variance**. This factor is a cost-benefit determination. If an investigation would not result in any changes that could eliminate future occurrences of the variance, then the benefit to be gained from investigating the variance would not be worth the cost of the investigation.

Note that in a flexible budget **only the variable budgeted revenues and costs are adjusted**. Only variable revenues and costs change with changes in volume. Fixed costs are just that: fixed. They do not change with changes in sales volume, as long as the activity remains within the relevant range. Therefore, **the fixed costs in the flexible budget are exactly the same as the fixed costs in the static budget.**

Note: Flexible budgeting and a standard costing system go together. One is meaningless without the other.

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[76] The **relevant range** is the range of activity over which a certain cost behavior holds true. The term is used most often to refer to fixed costs. Fixed costs do not vary in response to changes in activity as long as the activity level remains within a certain range. If the activity level drops below or rises above that range of activity, the fixed cost can change in total. An example of a fixed cost that can change is depreciation on factory equipment. As long as production does not rise beyond a certain level, the company will be able to continue production with its existing equipment. But if production requirements rise beyond the level that current equipment can meet, additional equipment will be required, and depreciation will increase.

[77] The contribution margin is sales revenue minus variable expenses. A contribution margin per unit can be calculated by subtracting the per-unit variable expenses (including direct materials, direct labor, variable manufacturing overhead, and variable selling and variable administrative costs) from the per-unit sales price. The total contribution margin is total sales minus total variable expenses, or the per-unit contribution margin multiplied by the number of units sold.

Example: Below is an income statement showing actual results alongside the static budget (the master budget) and the flexible budget prepared for the actual sales volume:

	Actual Results	Static Budget	Flexible Budget
Units sold	20,000	24,000	20,000
Revenues	$ 2,500,000	$ 2,880,000	$ 2,400,000
Variable costs:			
Direct materials	1,243,200	1,440,000	1,200,000
Direct manufacturing labor	396,000	384,000	320,000
Variable manufacturing overhead	261,000	288,000	240,000
Total variable costs	$ 1,900,200	$ 2,112,000	$ 1,760,000
Contribution margin	$ 599,800	$ 768,000	$ 640,000
Fixed costs	570,000	552,000	552,000
Operating income	$ 29,800	$ 216,000	$ 88,000

The flexible budget will be used **along with** the static budget for the period's variance reporting. The only difference between the static budget and the flexible budget is the volume used to calculate variable revenues and expenses. The static budget is prepared for a planned sales volume of 24,000 units, whereas the flexible budget is prepared as if the company had a planned sales volume of 20,000 units, which is the actual number of units sold. The variable revenue and cost items in the flexible budget have been adjusted downward for the sales that were lower than planned. Note that the budgeted fixed cost amount is the same in the flexible budget as it is in the static budget.

For each variable revenue and cost, the static budget amount has been divided by the static budget volume of 24,000 to find the budgeted per unit revenue/cost, and that per unit revenue/cost has been multiplied by the actual number of units sold (20,000) to calculate the flexible budget amount. The fixed cost static budget amount of $552,000 has been carried over to the flexible budget column unchanged.

The flexible budget can be prepared only **after the end of a period**, when the actual volume for the period is known. Therefore, a flexible budget would be prepared for each month or each quarter as well as for the year-end, but only when the actual volume for that period is known.

Project Budgeting

As the name suggests, a project budget is a budget for a specific project. As such, the time frame of the budget may be very short or more long-term, depending on the length of the project.

Project budgets are fundamentally different from the master budget and the flexible budget. The master budget or the flexible budget covers a distinct time span, such as the month of January. In contrast, a project budget covers an identifiable project that has its own time span. That time span may be as little as a week, or it may be as much as several years. The focus in project budgeting is on one separate project. Examples of projects that might be budgeted for separately are capital budgeting projects such as the purchase of a new machine or the construction of a new plant. A project may be the development and testing of a new product, the acquisition of another company, a new software installation, a marketing plan for entering a new geographical area, or a budget for a long-term contract.

Projects must be planned over their entire life spans and should be viewed as special commitments. Their budgeted amounts must be integrated into the master budget of the company for the relevant period or periods.

A project budget must include all the costs that will be required for the project. Though this requirement seems obvious, indirect costs and overheads that will be allocated to the project can easily be missed. All indirect costs and overheads to be allocated to the project must be identified and included.

A long-term project budget for the introduction of a new product can also be called a **life-cycle budget**. A life-cycle budget plans incomes and expenses for one specific product throughout its entire life cycle, from its development through its decline, enabling the company to see the cash flows that will result from the product over its entire life. When all the lifetime development and production costs are set forth in the life-cycle budget, management can set a price that will cover not only the company's costs but also its required return on investment.

Zero-Based Budgeting versus Incremental Budgeting

Typically, budgets are developed by beginning with the current period's actual or the current period's budgeted figures and adjusting them for any changes anticipated in the coming period. This process assumes that the budget period will be related to the current period. The focus is on things that are expected to change during the coming year. This approach to budgeting is called an **incremental** approach.

Zero-based budgeting is different. Under zero-based budgeting, the budget is prepared **without any reference to, or use of, the current period's budget or the likely operating results for the current period**. Every planned activity must be justified with a cost-benefit analysis.

As an alternative to reviewing all of the company's activities every year, a company could schedule zero-based budgeting on a rotating basis, with only a few different departments or divisions being subject to an in-depth review of their activities each year.

Note: With incremental budgeting, the actual results from the current period are assumed to be acceptable for future periods (with some adjustments for changed circumstances). That assumption is not made with zero-based budgeting.

Continuous (Rolling) Budgets

A continuous budget, also called a rolling budget, is one that is prepared for a certain period of time ahead of the present. For example, a one-year continuous budget would be prepared at the end of every month for the next twelve months.

Continuous budgets were discussed in more detail in *Time Frames for Budgets* in the *Budgeting Concepts* topic in this section.

Study Unit 31: C.3. Annual Operating Plan and Supporting Schedules

The Budgeting Cycle

The budgeting cycle is a process that goes on throughout the year, even though the budget is probably completed before the year begins. The budgeting cycle consists of more than just the development of the annual profit plan, although that is a big part of the cycle. Throughout the budget year, actual results need to be compared with planned results and variances investigated. Without this comparison and investigation, the budgeting cycle loses much of its usefulness to the company. The process includes:

- Using data from past performance as well as future expectations, managers at all levels in the organization work together to plan the performance of the whole company for the next budget period. Management accountants are involved in this planning, as well. The result is the annual master budget or profit plan for the coming period.
- Throughout the period, actual results are reported on and compared with budgeted results on a monthly or quarterly basis.
- Management accountants assist managers in investigating the variances from the plan. If necessary, operational changes are made. If the budget cannot be achieved because of some external situation that has developed, the budget itself may need to be revised.
- Throughout the period, managers and management accountants monitor market feedback, external conditions, and actual results as they plan for the next budget period. For example, if a sales decline occurs, managers may plan changes to the product line for the next period.

Development of the Annual/Master Budget or Profit Plan

The end result of the annual profit planning process is a full set of budgeted financial statements for the budget year, including monthly or at least quarterly interim budgeted financial statements. The budgeted financial statements include the budgeted balance sheet, budgeted income statement, and budgeted statement of cash flows. The budgeted financial statements are prepared by responsibility center, and the responsibility center budgeted statements are consolidated into the company-wide budgeted financial statements. The individual responsibility center budgets and the consolidated budget together make up the master budget.

The development of an annual profit plan for a large corporation may take many months to complete because the annual profit plan is made up of several different budgets, and some budgets cannot be developed until other budgets have already been completed. For example, the Sales Budget will be the driving factor in determining how many units must be produced, and therefore the Sales Budget must be completed before the production budget can be completed.

One of the most important things that can be done in the process of developing the profit plan is involving all the correct people. Profit planning is not a process to be undertaken exclusively by upper management or during board meetings. Lower-level managers need to be involved because they know what is possible, what is not possible, and what resources are required to meet a specific level of activity. Including lower-level managers in the budgeting process is called **participative budgeting**.

Participative budgeting has several benefits for the organization. When the people responsible for fulfilling the budget are involved in the process of developing it, they will be more likely to support and accept the budget and be more motivated to meet it. In addition, the accuracy of the budget will be increased because of the input from the people who are actually involved in the process being planned.

Bottom-up budgeting is similar in concept to participative budgeting. In bottom-up budgeting, the budget is developed by starting at the lowest levels in the operations systems and building revenues and costs from there.

Even when participative or bottom-up budgeting are being used, upper management still needs to be involved in the planning and budgeting process. Management needs to **set the goals**, **establish the priorities**, and **provide the necessary support** to make sure the process is completed correctly.

Development of the Master Budget

The Master Budget consists of two classifications: the Operating Budget and the Financial Budget.

The Operating Budget

The Operating Budget includes the **Budgeted Income Statement and all the budgets that support it**, which will be detailed in the following pages, including:

- Sales Budget
- Production Budget
- Direct Materials Usage Budget
- Direct Materials Purchases Budget
- Direct Labor Usage Budget
- Manufacturing Overhead Costs Budget
- Ending Inventories Budgets (Finished Goods and Direct Materials)
- Budgeted Cost of Goods Manufactured
- Budgeted Cost of Goods Sold
- Nonmanufacturing Budgets
- Budgeted Income Statement

The Financial Budget

The Financial Budget includes:

- Capital Expenditures Budget
- Cash Budget
- Budgeted Balance Sheet
- Budgeted Statement of Cash Flows

The Capital Expenditures Budget

The Capital Expenditures Budget is **not a part of the annual budget development process**, but it is very important to the development of the annual budget.

The Capital Expenditures Budget is the **budget for long-term capital expenditures** such as property, plant, and equipment. Because capital expenditures are large and expensive, they require advance planning to have the financing in place and the necessary time to purchase or construct the assets so they will be available when they are needed. Therefore, the capital expenditures budget is usually prepared for years in advance and reviewed on an annual basis.

Any capital expenditures to be made during the budget year will need to be included in the budgeting process for the year. Capital expenditures budgeted for the coming year will affect the Budgeted Balance Sheet as increases in fixed assets and in accounts receivable, inventory, and accounts payable. They will affect the Budgeted Income Statement as income expected from the new projects along with related expenses, including depreciation on the new equipment. Those effects on the income statement and the balance sheet will affect cash as well, so they will flow to the Cash Budget and the Budgeted Statement of Cash Flows.

The Capital Expenditures Budget consists of a list of each major project that has been approved and the amount to be funded for each coming year. The annual amount for each project is then broken down

according to the quarter(s) or possibly month(s) when the expenditures for each project are expected to occur and when the cash inflows from each project are expected to occur. The quarterly or monthly totals of cash inflows and cash funding requirements for all projects that will affect the budget period will be incorporated into the Operating Budget and the Financial Budget. Any anticipated financing must be included in the Cash Budget and the Budgeted Balance Sheet. The Budgeted Balance Sheet must reflect the investments and the financing, and the Budgeted Income Statement and Statement of Cash Flows must reflect any net income and cash flows planned to be generated by the capital projects for the coming period.

Senior management must communicate information about planned capital projects for the year to the segment managers who will be developing their segment budgets so they can incorporate the effects of the planned capital projects into their budgets for the period. For example:

- Capital expenditures for selling and administrative assets to be purchased during the budget year will affect fixed assets on the Budgeted Balance Sheet and depreciation expense in the Budgeted Income Statement.
- Capital expenditures for investments in new production projects for the budget year will affect the Budgeted Balance Sheet as increases in fixed assets and in accounts receivable, inventory, and accounts payable. They will affect the Budgeted Income Statement as revenue expected from the new projects along with related expenses, including depreciation on the new equipment.
- Any anticipated financing must be included in the Cash Budget and the Budgeted Balance Sheet.
- The effects on the Budgeted Income Statement and the Budgeted Balance Sheet will affect cash as well, so they will flow to the Cash Budget and the Budgeted Statement of Cash Flows for the period.

The Operating Budget

The Operating Budget is the **Budgeted Income Statement** and all the individual budgets that feed into it. The individual budgets and the purpose of each will be discussed, as well as the order in which they are prepared.

> **Note**: For the exam, candidates may need to know the order in which the different budgets within the operating budget are prepared because some of the questions may be based on the order of preparation. It is critical to **produce the Sales Budget first** so that the company knows how many units will need to be produced or purchased.

As the various budgets that make up the operating budget are explained, examples will be given. For each budget example, annual amounts will be used for simplicity's sake. However, in a real situation, these budgets would be developed using monthly figures or at least quarterly figures, so that as the year progresses, actual results for each month or quarter and the year-to-date can be compared with planned results for the same period and year-to-date. The monthly or quarterly amounts are needed to develop the Cash Budget (part of the Financial Budget), as well. These monthly or quarterly figures should not be the same for every month or quarter; that is, they should not be annual amounts simply divided by twelve or by four. Seasonal changes and other expected variations in activity should be taken into consideration in the planning process.

1. Sales Budget

The Sales Budget shows the expected sales in units of each product and each product's expected selling price. The Sales Budget is based on the firm's forecasted sales level, its short- and long-term objectives, and its production capacity.

The first budget within the Operating Budget to be prepared is always the Sales Budget, because the Production Budget and all the other budgets for the company are derived from the Sales Budget.

Example: If sales are expected to be low, the company will not need as much inventory and may be able to cut back on its usage of some other resources, as well. On the other hand, if sales are expected to be high, more of each of those resources will be required.

Considerations in developing the Sales Budget include both external and internal factors.

External factors include:

- The current economic environment and the economic environment expected during the future budget period, based on current economic forecasts
- Consumer attitudes regarding the company's products and anticipated changes such as to lifestyles and other psychographic[78] variables
- Competitors' actions and plans
- The projected level of industry sales, the company's current and projected market share and the company's position within the industry with respect to its degree of influence or dominance.

Internal factors include:

- Current sales levels and sales trends of the past few years
- Pricing policies
- Credit policies, anticipated changes to credit policies, and their forecasted effects on sales
- Advertising and promotional activities
- Unfilled back orders, the fulfillment of which may affect future sales revenue
- Current and future availability of resources, including plant and equipment, capital, and labor
- The nature of the production processes, plant capacity, and utilization of resources.

The Sales Budget should be developed by responsibility center or possibly by salesperson, depending on the nature of the business. The Sales Budget needs to be based on **realistic** estimates of sales, since the Sales Budget will be the driver behind all the other budgets.

- If the Sales Budget is too optimistic, production will be too high, inventory will be too high, and problems such as cash shortfall may result.
- If the Sales Budget is too low, production and inventory will be too low, and sales may be lost because of a lack of product to sell.

Note: The Sales Budget needs to include sales revenues expected from any new capital projects expected to begin generating sales during the coming year.

The development of the Sales Budget should incorporate forecasted **sales volume**, forecasted **sales mix**, and budgeted **selling prices**.

The Sales Budget is probably the **most difficult budget to produce** because it relies entirely on information and estimations that are outside of the direct control of the company. The company has no direct control over the economy or over competitors' actions and technological advances that may affect sales of the company's product.

If demand is greater than the company's production capacity, however, the Sales Budget should not reflect the amount the company **could** sell if it were able to increase production to meet the demand. Unless the company has specific plans in its Capital Expenditures Budget to increase production facilities due to the

[78] Psychographics is the use of demographics to determine attitudes and tastes of a segment of a population, such as is done in market research.

expected increased demand, the Sales Budget will need to be adjusted to the quantity that **will be available** to be sold.

Note: One more item that needs to be considered in the Sales Budget is the level of credit sales and when those credit sales will be collected. Though the timing of collections is not critical for the Sales Budget itself, the amount of collections is critical for the development of the Cash Budget (covered later).

Example: The **Sales Budget** for the year ending December 31, 20X3 for Wood Creations, a manufacturer of three products: wood birdhouses, wood garden benches, and wood bowls, is as follows.

	Birdhouses	Benches	Bowls	Total
Budgeted sales in units	4,000	2,500	3,500	10,000
Selling price	$50	$275	$60	
Total budgeted sales revenues	$200,000	$687,500	$210,000	**$1,097,500**

The budgeted sales revenue in the Master Budget will be $1,097,500. In developing its budget, the production department will use the information from the Sales Budget about how many units of each product the sales department plans to sell.

2. Production Budget

After determining the Sales Budget, the Production Budget can be developed because it incorporates the budgeted sales. The Production Budget also incorporates the company's production capacity and finished goods inventory objectives to determine how many units to produce during the period.

Note: The Production Budget needs to include production from any new capital projects planned to begin production during the year, which should be available from the Sales Budget.

If the company would like to increase its finished goods inventory level by year-end, it will need to include the desired inventory increase in its production plans. Similarly, if the company wants to decrease year-end inventory, it will need to produce fewer units than it plans to sell so it can sell down the units in inventory.

The Production Budget also includes **when** the units will be produced. The units must be produced prior to the time they will be needed for sale but not too far in advance. If increased sales are expected in the early part of the year, production should be planned to be higher early in the year. If higher sales are expected later in the year, increased production needs to take place later in the year or else the company will need to plan to pay significant inventory storage costs.

If no significant change is planned in work-in-process inventories during the period, the amount of change in WIP inventories can be ignored for production planning. However, if significant changes are planned in WIP inventories during the period, the change in the number of equivalent units in WIP inventories must be taken into account, as well.

Note: If the prices of the direct materials needed in production are expected to change significantly in the future, the expected changes must also be considered in determining the timing of production. As much as possible, the company will want to purchase direct materials needed when the prices of the materials are lower rather than higher.

Example: The **Production Budget** for the year ending December 31, 20X3 for Wood Creations is as follows.

The company expects to end 20X2 (the current year) with 300 birdhouses, 200 benches, and 300 bowls on hand in finished goods inventory, so that is the beginning finished goods inventory for each product. The company wants to increase its finished goods inventory levels to 350 birdhouses, 250 benches, and 350 bowls at year-end 20X3.[1] No significant changes are expected in work-in-process inventories.

		Birdhouses	Benches	Bowls
	Budgeted sales in units (from the Sales Budget)	4,000	2,500	3,500
+	Ending finished goods inventory desired	350	250	350
=	Total units required	4,350	2,750	3,850
−	Beginning finished goods inventory	300	200	300
=	Finished goods units to be produced	**4,050**	**2,550**	**3,550**

[1] The beginning and ending finished goods inventory levels are simply provided for this example. They cannot be calculated or verified from any other information given in the example.

The Production Budget in number of units to be produced provides the foundation for the development of the following four budgets:

1) The **Direct Materials Usage Budget** makes use of the number of units to be produced from the Production Budget, the number of units of direct materials allowed per unit produced, and the budgeted costs per unit of materials to determine the total quantity of direct materials that will be needed in production and the budgeted costs of the materials to be used.

2) The **Direct Materials Purchases Budget** uses information from the Direct Materials Usage Budget but also incorporates the desired change in inventories of raw materials to determine the direct materials to be purchased during the period.

3) The **Direct Labor Usage Budget** uses the units planned to be produced from the Production Budget, the number of direct labor hours allowed per unit produced, and the budgeted direct labor rates per hour to determine the budgeted total direct labor hours to be used and the budgeted cost of the direct labor used.

4) The **Manufacturing Overhead Costs Budget** draws on the Production Budget for planned production volume to determine the budgeted amount of variable manufacturing overhead costs such as equipment maintenance that increases and decreases as production increases and decreases. It uses the Production Budget also to determine the budgeted fixed manufacturing overhead costs such as plant supervisors' salaries. Although fixed manufacturing overhead costs do not change as production levels change as long as the change in activity remains within the relevant range, if the budgeted production is outside that range, appropriate adjustments need to be made to budgeted fixed manufacturing costs. The Manufacturing Overhead Costs Budget also utilizes the budgeted amounts allowed of the allocation bases used for overhead application (usually budgeted direct labor hours from the Direct Labor Usage Budget or budgeted machine hours) to calculate the predetermined overhead application rates.

The Direct Materials Usage and Purchases Budgets, Direct Labor Usage Budget, and Manufacturing Overhead Costs Budget feed into the Ending Inventories Budget, Budgeted Cost of Goods Manufactured, and Budgeted Cost of Goods Sold.

Because all these budgets are interrelated, a change in one budget will require a change in another budget or budgets. As the level of production changes, the amount of direct labor and direct material required will change. As the amount of direct labor changes, there may need to be a change as well in **indirect materials** and **indirect labor**, both of which are manufacturing overhead costs.

- Indirect materials are materials used in the manufacturing process, but their costs are not directly traceable to any specific product. Indirect materials may represent a very minor part of a finished product's costs, or they may not be an integral part of a finished product at all. Examples are screws, glue, cleaning chemicals, and disposable tools. Indirect materials are usually variable manufacturing overhead costs.
- Indirect labor is likewise not directly traceable to any specific product. For example, the wages of a janitor who cleans up the plant are indirect labor costs because the janitor's wages cannot be traced to any one product. Because indirect labor is a fixed manufacturing overhead cost, it is less likely to respond to changes in the production level than a variable cost would. However, the effect on indirect labor of production changes should be considered since in the long run, all costs are variable.

As the production level changes, changes will be required in the Manufacturing Overhead Costs Budget.

Note: Because of the way the individual budgets are connected to each other, a change in one budget will almost always affect at least one other budget.

2A. Direct Materials Usage Budget

The number of units to be produced (from the Production Budget) is used to calculate the quantities of direct materials required, and that is used along with the expected costs for direct materials to develop the Direct Materials Usage Budget. The quantities of direct materials to be used are affected by the quality of the direct materials purchased as well as the efficiency of the production employees in converting them into finished products.

For each product, the company has a **bill of materials** that specifies which materials and how much of each are to be used in manufacturing the product, the sequence in which the materials are to be used, and in what department each process is to be completed. Those bills of materials are used to develop the Direct Materials Usage Budget.

The Direct Materials Usage Budget will also be affected by production needs created by any new capital projects scheduled to begin production during the year.

An example of a Direct Materials Usage Budget follows.

Example: The **Direct Materials Usage Budget** for the year ending December 31, 20X3 for Wood Creations is as follows.

Direct materials required to produce one birdhouse: 1.5 board feet of ⅜" oak, cost $10 per ft.
Direct materials required to produce one garden bench: 9 board feet of ½" oak, cost $12 per ft.

Direct materials required to produce one bowl: 0.5 board feet of 3" oak, cost $20 per ft.

All direct material costs are expected to be the same for 20X3 as they have been for 20X2.

The company's beginning direct materials inventory is planned to be 170 board feet of ⅜" oak, 1,000 board feet of ½" oak, and 75 board feet of 3" oak. The company wants to end the year with 200 board feet of 3/8", 1,100 board feet of ½", and 100 board feet of 3" oak. (The beginning and ending direct materials inventory levels are given and cannot be recalculated from any other information provided.)

(continued)

Example of a Direct Materials Usage budget (continued):

Budgeted quantity of direct materials to be used in production:

	Birdhouses ⅜" Oak	Benches ½" Oak	Bowls 3" Oak	Total
Units to be produced (from Production Budget)	4,050	2,550	3,550	
Direct materials allowed per unit (board feet)	1.5	9.0	0.5	
Total units of DM needed for production	6,075	22,950	1,775	30,800
Budgeted costs of direct materials to be used				
Available from beginning materials inventory:				
Number of board feet available in beginning inv.	170	1,000	75	
Cost per board foot	$10	$12	$20	
Cost of direct materials in beginning inventory	$ 1,700	$ 12,000	$ 1,500	$ 15,200
Plus additional DM needed for production:				
Total units needed less units in beginning inventory	5,905	21,950	1,700	
Cost per board foot	$10	$12	$20	
Cost of additional direct materials needed	$ 59,050	$ 263,400	$ 34,000	$356,450
Total cost of direct materials to be used[1]	**$ 60,750**	**$ 275,400**	**$35,500**	**$371,650**

[1] Note that the total cost of direct materials to be used **does not include** any adjustment for desired ending direct materials inventories. This budget is only the Direct Material **Usage** budget. The Direct Materials **Purchases** budget (shown next) will incorporate the desired ending balances of direct materials inventories.

2B. Direct Materials Purchases Budget

After the Direct Materials Usage Budget is complete, the Purchasing Department can prepare the Direct Materials Purchases budget. As is done in the Production Budget for finished goods, the quantities of direct materials to be used in production are adjusted by the amount of change from beginning to ending materials inventories to determine the quantity of each material to be purchased. Then the costs for those purchases are calculated using the budgeted costs per unit of direct materials.

The Direct Materials Purchases Budget will also be affected by production needs created by any new capital projects planned to begin production during the year. Those should be incorporated in the Sales Budget and the Production Budget.

Example: The **Direct Materials Purchases Budget** for the year ending December 31, 20X3 for Wood Creations is as follows.

	Birdhouses ⅜" Oak	Benches ½" Oak	Bowls 3" Oak	Total
Physical units (board feet):				
Total units of direct materials budgeted to be used in production[1]	6,075	22,950	1,775	
+ Desired ending direct materials inventory	200	1,100	100	
= Total units of DM required	6,275	24,050	1,875	
− Beginning DM inventory in units	170	1,000	75	
= ***Units of DM to be purchased (board feet)***	**6,105**	**23,050**	**1,800**	
Costs:				
Cost per board foot	$10	$12	$20	
Total cost of direct materials purchases	**$61,050**	**$276,600**	**$36,000**	**$373,650**

[1] From Direct Material Usage Budget.

2C. Direct Labor Usage Budget

The Direct Labor Usage Budget is developed using direct labor standards—the time allowed per unit of output and the standard cost allowed per hour of direct labor time—to calculate the budgeted cost for direct labor used. The company usually calculates a separate Direct Labor Usage Budget for each product and each type of labor used in production at its standard cost.

The standard cost per hour of direct labor time will generally include wages and all other employee costs. These other costs include employer contributions to Social Security (FICA) and Medicare, workers' compensation insurance for workers who are hurt on the job, federal and state unemployment taxes paid by the employer, life and health insurance premiums if they are provided, any pension plan contributions paid by the company, and any other employee benefits. These may all be presented in an **Employee Benefit Statement**.

Example: The **Direct Labor Usage Budget** for the year ending December 31, 20X3 for Wood Creations is as follows.

Wood Creations has only one class of direct labor, and the budgeted direct labor hourly rate is $20 per hour.

	Birdhouses	Benches	Bowls	Total
Units planned to be produced[1]	4,050	2,550	3,550	
Direct labor hours allowed per unit	0.6	2.0	1.0	
Total budgeted direct labor hours	2,430	5,100	3,550	**11,080**
Budgeted hourly rate	$20	$20	$20	
Budgeted cost of direct labor used	**$48,600**	**$102,000**	**$71,000**	**$221,600**

[1] From Production Budget.

2D. Manufacturing Overhead Costs Budget

Absorption costing is used by manufacturers according to generally accepted accounting principles. Under absorption costing, manufacturing overhead is a product cost. Product costs are inventoried and expensed as cost of goods sold along with other product costs only when the units they are attached to are sold.

Manufacturing overhead costs are **allocated** (also called "**applied**" or "**attached**") to the units produced during the period according to a predetermined rate.

Under the traditional method of applying manufacturing overhead costs to units produced, usually either the machine hours allowed per unit or the direct labor hours allowed per unit are used as the basis of the allocation. Therefore, the production budget is used in developing the manufacturing overhead costs budget.

Using the production budget's planned production volume, the budgeted total variable and fixed overhead costs are determined. Budgeted variable overhead costs such as equipment maintenance are more dependent on the planned production volume than are budgeted fixed overhead costs. Those totals are then each divided by the budgeted number of hours of the allocation base (from the direct labor usage budget or the budgeted machine hours) allowed for the budgeted production volume (from the production budget) to calculate the predetermined fixed and variable manufacturing overhead application rates per hour allowed for the budgeted production.

The per-hour application rate multiplied by the number of hours allowed per unit equals the amount of manufacturing overhead that will be applied to each unit actually produced during the period. The same process is followed in developing the manufacturing overhead costs budget.

The total budgeted manufacturing overhead to be applied to the budgeted production is calculated by multiplying the budgeted manufacturing overhead application rate per hour by the number of direct labor or machine hours allowed for the budgeted production volume. Depending on management's method of

applying the overhead to production, the overhead may be applied separately for fixed and variable overhead, or a single combined rate may be used.

Example: The **Manufacturing Overhead Costs Budget** for the year ending December 31, 20X3 for Wood Creations follows.

Wood Creations allocates manufacturing overhead based on direct labor hours. A total of 11,080 direct labor hours are budgeted according to the Direct Labor Usage Budget. The total budgeted fixed and variable manufacturing overhead costs are each divided by the 11,080 direct labor hours in the Direct Labor Usage Budget to calculate the predetermined fixed and variable manufacturing overhead rates per direct labor hour.

Here are the total budgeted fixed and variable manufacturing overhead costs:

Budgeted fixed manufacturing overhead costs:		
Depreciation	$ 2,240	
Supervisory salaries and employee costs	30,000	
Other indirect fixed costs	1,000	$ 33,240
Budgeted variable manufacturing overhead costs:		
Indirect manufacturing labor	$13,960	
Equipment maintenance	5,000	
Supplies	3,200	22,160
Total budgeted manufacturing overhead costs		**$55,400**

The predetermined manufacturing overhead rates per direct labor hour are:

Fixed manufacturing OH: $33,240 budgeted ÷ 11,080 direct labor hours budgeted = $3/DLH

Variable manufacturing OH: $22,160 budgeted ÷ 11,080 direct labor hours budgeted = $2/DLH

Total manufacturing OH: $55,400 budgeted ÷ 11,080 direct labor hours budgeted = $5/DLH

Based on the predetermined overhead application rate, budgeted manufacturing overhead costs applied to each product based on direct labor hours allowed for the budgeted output of each product are as follows.

	Birdhouses	**Benches**	**Bowls**	**Total**
Number of budgeted DL hours[1]	2,430	5,100	3,550	**11,080**
Manufacturing OH applied @ $5/DLH	$12,150	$25,500	$17,750	**$55,400**

[1] From Direct Labor Usage Budget

3. Ending Inventories Budgets (Finished Goods and Direct Materials)

The next budgets to be prepared are the budgets for Ending Inventories, both finished goods inventory and direct materials inventory.

Example: The **Ending Inventories Budgets** for the year ending December 31, 20X3 for Wood Creations:

Finished Goods Inventory, budgeted product cost per unit:

	Birdhouses	Benches	Bowls
Direct materials:[1]			
⅜" oak: 1.5 board ft. per unit × $10	$15		
½" oak: 9 board ft. per unit × $12		$108	
3" oak: 0.5 board ft. per unit × $20			$10
Direct labor:[2]			
Birdhouses: 0.6 hours × $20	12		
Benches: 2 hours × $20		40	
Bowls: 1 hour × $20			20
Manufacturing overhead:[3]			
Birdhouses: 0.6 hours × $5	3		
Benches: 2 hours × $5		10	
Bowls: 1 hour × $5			5
Total budgeted product cost per unit	**$30**	**$158**	**$35**

Wood Creations uses the **first-in-first-out** (**FIFO**) **cost flow assumption**. Therefore, the budgeted costs per unit above will be used to calculate the cost of the budgeted ending direct materials and finished goods inventories.

Budgeted Ending Inventories (**Direct Materials and Finished Goods**):

Direct materials inventory:

	3/8" Oak	1/2" Oak	3" Oak	Total Cost
Ending inv. on hand (board feet)	200	1,100	100	
Budgeted direct material cost/bd. ft.	$10	$12	$20	
Ending inventory - Cost	$ 2,000	$ 13,200	$ 2,000	**$17,200**

Finished goods inventory:

	Birdhouses	Benches	Bowls	
Ending inv. on hand (FG units)	350	250	350	
Budgeted finished good cost/unit	$30	$158	$35	
Ending inventory - Cost	$ 10,500	$ 39,500	$ 12,250	**$62,250**
Total ending inventories – DM and FG				**$79,450**

[1] Number of board feet required per finished goods unit of each product are from the Direct Material Usage Budget. Direct material costs per board foot are from the Direct Materials Purchases budget.

[2] Number of direct labor hours budgeted per finished goods unit of each product are from the Direct Labor Usage Budget. Direct labor cost per hour is also from the Direct Labor Usage Budget.

[3] Manufacturing overhead application rate is from the Manufacturing Overhead Costs Budget.

4. Budgeted Cost of Goods Manufactured

Cost of goods manufactured (COGM) is the total of the costs directly attributable to producing items **brought to completion in the manufacturing process** during the period. For each unit brought to completion, cost of goods manufactured includes the direct material and direct labor costs of the unit and an allocation of a portion of manufacturing overhead costs.

Budgeted cost of goods manufactured is calculated using the following formula:

	Budgeted Direct Materials Used
+	Budgeted Direct Labor Used
+	Budgeted Manufacturing Overhead Applied
=	Budgeted Total Manufacturing Costs
+	Budgeted Beginning Work-in-Process Inventory
–	Budgeted Ending Work-in-Process Inventory
=	**Budgeted Cost of Goods Manufactured**

If no significant change is planned in work-in-process inventory during the period, beginning and ending WIP inventories can be budgeted at the same level. For purposes of determining budgeted cost of goods manufactured, any reasonable value may be used for both beginning and ending budgeted work-in-process inventory for each product. Since beginning and ending work-in-process inventories are assumed to be the same, adding the beginning balance to budgeted total manufacturing costs and then deducting the same amount as the ending balance will cause budgeted cost of goods manufactured to be equal to budgeted total manufacturing costs. However, if significant changes are planned in the WIP inventories, the change in costs based on beginning and ending equivalent units in WIP inventories and their predetermined costs must be included in the calculation of budgeted cost of goods manufactured.

An estimated total work-in-process inventory amount of $5,000 will be used for both beginning and ending WIP inventories in the following example of Wood Creations' Budgeted Cost of Goods Manufactured, and it will be allocated among the three products.

Example: The **Budgeted Cost of Goods Manufactured** for the year ending December 31, 20X3 for Wood Creations is as follows.

		Birdhouses	Benches	Bowls	Total
	Budgeted direct materials used[1]	$ 60,750	$275,400	$ 35,500	$ 371,650
+	Budgeted direct labor used[2]	48,600	102,000	71,000	221,600
+	Budgeted manufacturing OH applied[3]	12,150	25,500	17,750	55,400
=	Total budgeted manufacturing costs	$ 121,500	$ 402,900	$ 124,250	$ 648,650
+	Budgeted beginning WIP inventory	1,000	3,000	1,000	5,000
–	Budgeted ending WIP inventory	1,000	3,000	1,000	5,000
=	Budgeted cost of goods manufactured	**$121,500**	**$402,900**	**$124,250**	**$648,650**

[1] From Direct Material Usage Budget.

[2] From Direct Labor Usage Budget.

[3] From Manufacturing Overhead Costs Budget.

5. Budgeted Cost of Goods Sold

After the budgeted cost of goods manufactured is complete, the company can develop the **Budgeted Cost of Goods Sold**. Budgeted cost of goods sold is calculated as follows:

	Budgeted Beginning Inventory
+	Budgeted Cost of Goods Manufactured (or Purchases for a reseller)
=	Budgeted Goods Available for Sale
−	Budgeted Ending Inventory
=	Budgeted Cost of Goods Sold

Example: The **Budgeted Cost of Goods Sold** for the year ending December 31, 20X3 for Wood Creations is as follows.

	Birdhouses	Benches	Bowls	Total
Budgeted cost - beginning FG inventory[1]	$ 8,400	$ 30,000	$ 9,900	$ 48,300
+ Budgeted cost of goods manufactured	121,500	402,900	124,250	648,650
= Budgeted cost - goods available for sale	$ 129,900	$ 432,900	$ 134,150	$ 696,950
− Budgeted cost - ending FG inventory[2]	10,500	39,500	12,250	62,250
= Budgeted cost of goods sold	**$ 119,400**	**$ 393,400**	**$ 121,900**	**$ 634,700**

[1] Beginning finished goods inventory costs are calculated as follows: Birdhouses - 300 units @ $28 per unit; Benches - 200 units @ $150 per unit; and Bowls - 300 units @ $33 per unit. The number of units of each in budgeted finished goods beginning inventory comes from the Production Budget. Costs per unit for the 20X3 beginning inventory (inventory produced during 20X2) are different from the costs per unit for the budgeted 20X3 production because 20X2's direct labor and manufacturing overhead costs were different from the budgeted amounts for 20X3. Costs per unit for the beginning inventory are simply given here and cannot be calculated from any other information given in this extended example.

[2] From Ending Inventories Budgets – Finished Goods.

6. Nonmanufacturing Budgets

Nonmanufacturing budgets are the budgets for the various areas of the company that are not involved in production. Those budgets include:

- Research and Development (R&D) Budget.
- Selling, Marketing and Distribution Budget, including sales supervisory salaries, sales commissions, selling expenses (such as travel and entertainment), advertising and promotion expenses, shipping-out expenses, telephone and wireless, office supplies, depreciation on office furniture and equipment used by sales and marketing personnel, and so forth.
- Administrative and General Expense Budget, including salaries and wages for management and support staff in administrative and staff departments (for example, accounting, legal, IT, and human resources), travel and entertainment, insurance, audit fees, telephone and wireless, office supplies, depreciation on office furniture and equipment used by administrative personnel, and so forth.
- Budgets for other expenses or sources of revenue.

The nonmanufacturing budgets need to be developed in enough detail to be useful. The assumptions underlying the values in them should be documented for reference. When budgets are revised during the budget development process, those documented assumptions will be needed for determining where changes

can be made. For example, the budgeted employees and their salaries underlying the budgeted administrative salaries and wages expense should be documented. If it is necessary to revise budgeted administrative salaries and wages, it will be much easier to make that revision if detail is available about the assumptions made in developing the amounts.

7. Budgeted Income Statement

The **Budgeted Income Statement** and all the individual budgets that feed into it make up the Operating Budget. After the various budgets within the Operating Budget are complete, a first draft of the budgeted income statement can be developed. Senior management will use the first draft of the budgeted income statement to evaluate the budgeted net income for the upcoming budget period. This evaluation may be done using earnings per share, an industry average, a price-earnings ratio, or various other means of evaluating the budgeted results. Changes will be made that will necessitate changes in the component budgets, and the process will be repeated until senior management is satisfied.

In addition, the budgeted income statement becomes a part of the budgeted balance sheet through its effect on retained earnings in the equity section.

The Financial Budget

The Financial Budget is the other major classification within the Master Budget. It includes the

- Capital Expenditures Budget,
- Cash Budget,
- Budgeted Balance Sheet, and
- Budgeted Statement of Cash Flows.

The Capital Expenditures budget has already been covered, since it must be in place for the budget year before any other budgets can be developed.

The Cash Budget

The Cash Budget (also called the Cash Management, Cash Flow or Working Capital Budget) draws on information from all the other budgets. Because it uses information from the other budgets, it is **the last budget prepared** before the set of budgeted financial statements are prepared. It is also one of the most important budgets developed. The Cash Budget tracks the inflows and outflows of cash on a month-by-month (possibly even week-by-week or day-by-day) basis.

The Cash Budget is similar to but not exactly the same as a Budgeted Statement of Cash Flows.

- Whereas the cash flows in the Budgeted Statement of Cash Flows are segregated according to operating, investing, and financing cash flows, the cash flows in the Cash Budget are segregated according to receipts and disbursements.
- The Cash Budget must be prepared **before** the Budgeted Balance Sheet can be prepared. On the other hand, the Budgeted Statement of Cash Flows must be prepared **after** the Budgeted Balance Sheet and Income Statement are prepared.

The Cash Budget shows the planned sources and uses of cash for the budget period. The various budgets prepared up to this point provide the information for the Cash Budget.

- The Capital Expenditures Budget provides information that can be used to determine disbursements for planned equipment purchases.

- The Sales Budget along with information on the company's credit policies and anticipated credit losses provides the information needed to determine budgeted collection of accounts receivable and when the cash flows will be received.
- The Direct Material Purchases, Direct Labor Usage, and the Nonmanufacturing Budgets along with information on the company's policy for paying its payables provide the information needed for budgeted cash disbursements. The timing of the cash disbursements for payables depends on the company's policy for paying its payables.

The ending cash balance from the Cash Budget appears on the Budgeted Balance Sheet for the period end.

If the Cash Budget is accurate, it will allow the company to plan for any cash shortfalls that may occur during the year and any excess cash that may accumulate during the year. Any excess cash should be invested for the period that it will not be needed, and the interest earned on the invested cash should be included in the cash budget.

Furthermore, predicting cash shortfalls will make it easier (and less expensive) for the company to obtain a short-term loan if management is aware of its need before the shortfall occurs and if it is able to present cash inflow and outflow projections to the bank to support its loan request and show the source of the repayment of the loan. In the event of a predicted cash shortfall, the company also will have time to obtain permanent capital from equity sources by selling shares if management determines that is the best alternative.

Note: Although all companies should prepare a Cash Budget, it is particularly important for those that operate as **seasonal businesses** to do so, preferably monthly. For a seasonal business, Production, Sales, and Ending Inventory by month are also critical budgets.

A numerical example of Wood Creations' Cash Budget will not be given here. Development of the Cash Budget would require much more detail than is available in this example regarding expected collection and disbursement patterns and amounts budgeted for nonmanufacturing items. Several problems are available in the Test Bank that can be used for practice in developing budgeted cash receipts and cash disbursements for a month or a quarter.

The following is the format of a cash budget. This format assumes the budgeting is done by quarter, but a monthly budget would be even better, with columns for each month.

Cash Budget for the Year Ending December 31, 20X3					
	Quarters				Year as a Whole
	Q1	Q2	Q3	Q4	
Cash balance, beginning	$	$	$	$	$
Plus receipts:					
Collections from customers					
Sale of capital equipment					
Total cash available					
Minus disbursements:					
Direct materials					
Payroll					
Manufacturing overhead costs					
Nonmanufacturing costs					
Capital equipment purchases					
Taxes paid					
Total disbursements					
Minimum cash balance desired					
Total cash needed					
Cash excess (deficit)	$	$	$	$	$
Financing:					
Beginning borrowings	$	$	$	$	$
Repayment(s) during period					
Interest expense					
Total effects of financing	$	$	$	$	$
Cash balance, ending	$	$	$	$	$

The Master Budget Financial Statements

After the Operating Budget and the Cash Budget have been prepared, the company can prepare its Master Budget financial statements. The individual budgets that make up the Operating and Financial Budgets are compiled into a Budgeted Income Statement, Balance Sheet, and Statement of Cash Flows. The budgeted financial statements are interconnected in the same manner as are financial statements that report actual results.

The Master Budget is the document the company relies on as its operating plan as it carries out management's plans to achieve its goals and objectives. It is a summary of management's operating and financial plans for the period, expressed as a set of budgeted financial statements that reflects the impact of the operating decisions and financing decisions to be made during the coming period.

Master Budget financial statements will probably be prepared for each month of the budget period, or at least for each quarter. The monthly budgeted financial statements can be developed and presented in a spreadsheet format with the months as the column headings. Monthly budgeted financial statements are very important because looking at the budgeted financial statements, particularly the cash flows for each month during the period, will enable the company to identify any potential problems before they develop.

Potential problems identified may relate to the company's existing loan agreements such as compliance with debt covenants.[79] For example, if the organization can determine based on its planned financial

[79] Long-term debt usually involves requirements for the company to maintain certain standards, such as minimum ratios in its financial statements, and these requirements are called **covenants**. Covenants are part of most loan agreements. One example of a covenant is a requirement that the company maintain a certain minimum current ratio, such as at least 2:1. If the company's current ratio falls below the required level at a financial statement date, the company is

statements that it will probably be in violation of a loan covenant during the second quarter of the year, it will have time to take corrective actions and adjust the budget accordingly to prevent the violation.

Also, if management sees that it will not meet the expected (or desired) profits or other financial measures after the preparation of the Master Budget financial statements, it needs to go back and look at the plans for the year, make changes, and revise the budgeted figures. This process of revision will probably take place several times before the resulting budgeted financial statements reflect senior management's plans for the coming period.

However, as the process of reconsideration takes place, management needs to be very careful not to engage in unrealistic budgeting by making unattainable changes to the budgeted amounts to meet some goal in the budgeted statements that will not be able to be met in the actual results.

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technically in default on its debt even though it may be making every scheduled payment. Under such circumstances, the lender can legally demand payment of the entire loan balance immediately, which could force the company into bankruptcy. Therefore, it is very important that the company maintain compliance with its debt covenants.

Answering Budgeting Calculation Questions

One of the most critical things candidates will need to do on the exam is make budgeting calculations. Though at first these questions are very intimidating, they will become easier with practice. Four main types of calculation questions could be asked on the exam.

1) One set of potential calculations addresses the question: "**What would the flexible budget have been?**" An exam problem will give a set of circumstances and the question will be related to what the flexible budget amount would be given an actual volume. For a single-product firm, the flexible budget amount is the standard rate by the actual quantity produced, sold, or whatever is required given the situation.

2) Some exam questions will ask for **the number of units a company needs to produce or purchase within a given period** (usually a month) to meet the demand for that period and the opening beginning inventory required for the next month. The answers to such questions are based on the following formula:

	Units needed for use in the current period
+	Units needed for the next month's beginning inventory (ending inventory)
=	Total units needed this period
–	Units on hand at the start of this period (beginning inventory)
=	Units needed to be produced or purchased this period

The formula above analyzes inventory in two steps.

- The first step of the formula determines how many units will be needed during the current period. Units will be needed either for use/sale in the current period or to have on hand in the ending inventory. Total units needed in the current period can come either from beginning inventory (units on hand at the start of the period) or from purchases or production during the period.
- The second step of the formula is used to calculate how many units will need to be produced or purchased during the period to have the required number of units available during the period.

Note: The preceding formula is the formula used when calculating the Production Budget to determine how many units the company needs to produce.

3) Another type of question may relate to the **amount of cash collected or spent during a period** (usually a month). Though these questions are difficult to read, the actual math is not too difficult. The key is to make sure to identify how much of the credit sales are collected in the month of the sale and how much are collected after the month of the sale. The same is true for payables: identify when the cash is actually paid.

